

REMARKS

Claims 15-42 are pending in the current application and stand rejected. Reconsideration of the rejections is respectfully requested in view of the following remarks.

In the specification, the paragraph beginning on page 15, line 25 and ending on page 16, line 2, is amended to reflect the trademark of VASELINE. Specifically, the occurrences of "Vaseline" were replaced with "VASELINE petroleum jelly."

Claims 15 and 25-42 stand rejected under 35 U.S.C. § 102(b) as allegedly anticipated by *Buell*, U.S. Patent No. 4,900,317. Additionally, claims 16-24 and 42 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over *Buell*. These rejections are respectfully traversed.

Claim 15 relates to an absorbent article that includes (1) an absorbent body disposed between a liquid-impermeable bottom sheet which is intended to lie distal from a wearer in use, (2) a liquid-permeable upper sheet which is intended to lie proximal to the wearer, and (3) either a) at least one longitudinally extending liquid barrier on each side of a center line of the upper sheet made of essentially liquid-impermeable material and fastened along or adjacent to a respective longitudinally extending side extremity of the absorbent article and comprising a free elastic sealing edge intended to be stretched against the wearer, or b) above the upper sheet, a top liquid-impermeable sheet which is intended to lie against the wearer, includes elastic for shaping the article to the wearer's body, and includes apertures intended to lie in register with the anus and the urethra orifice of the wearer, around which apertures elastically puckered sealing edges are disposed in the top sheet. The claim describes a method of achieving an improved sealing ability against the

skin of the wearer, at a given available elongation, by at least one sealing edge on each side of the center line, comprising modifying or treating the absorbent article in such a way as to cause the absolute value of $\Delta P = 2\gamma \cos\theta_m / r$ for said sealing edge to increase, where γ designates the surface tension of a liquid to be absorbed by suction, r designates the radius of the largest circle that can be encompassed in any pore with walls formed by said sealing edge against the wearer's skin at the given available elongation, and $\cos\theta_m$ is the weighted mean value of $\cos\theta$, where θ is the wetting angle of the liquid to the sealing edge or the skin comprising the pore walls.

Claim 29 describes an absorbent article that includes an absorbent body disposed between a liquid-impermeable bottom sheet which is intended to lie distal from a wearer in use, a liquid-permeable upper sheet which is intended to lie proximal to the wearer, and either 1) at least one longitudinally extending liquid barrier on each side of a center line of the upper sheet, made of essentially liquid-impervius material and fastened along or adjacent to a respective longitudinally extending side extremity of the article and including a free elastic sealing edge intended to be stretched against the wearer, or 2) above the upper sheet, a liquid-impermeable top sheet which is intended to lie against the wearer, includes elastic for shaping the article to the wearer's body, and includes apertures intended to lie in register with the anus and the urethra orifice of the wearer, around which apertures elastically puckered sealing edges are disposed in the top sheet where, in respect of at least one sealing edge on each side of the center line of said absorbent body, the absolute value of $\Delta P = 2\gamma \cos\theta_m / r$ lies above a line $y = kx + m$, where x designates the available elongation of the sealing edge, k has the value $-14/30$ and m has a value in the range of 48 to 69, within the major part of an available elongation range

of between 20 and 40%, and where γ designates the surface tension of a liquid to be absorbed, r designates the radius of the largest circle that can be enclosed in any pore with walls formed by said sealing edge against the skin of the wearer at a given available elongation, and $\cos\theta_m$ is the weighted value of $\cos\theta$, where θ is the wetting angle of the liquid to the sealing edge or the skin comprising the pore walls.

Applicants assert that *Buell* neither teaches nor renders obvious the claimed invention. A purpose of the present invention is to improve the sealing effect against the wearer of the absorbent article. This sealing effect is achieved between the skin of the wearer and the sealing edge. *Buell* relates to a diaper with leg cuffs, wherein the leg cuffs are intended to be "breathable", i.e., allow passage of vapor and at the same time retard the passage of liquid. Although the leg cuffs of *Buell* can be constructed in several ways, the main purpose of *Buell* is that at least one part of the leg cuff should be breathable. *Buell* does not focus on, or teach ways of improving, the sealing effect between the skin of the wearer and the sealing edge of the cuff.

Specifically, the present invention is directed to improvements in the sealing effect of a sealing edge of an absorbent article by increasing the absolute value of ΔP by increasing the product $(2\gamma\cos\theta_m/r)$ of a liquid barrier between the sealing edge of the barrier of an absorbent article and the skin. This can be done by decreasing the pore size (pores between the barrier and the skin) or increasing the wetting angle between the skin and the liquid.

The examiner asserts that *Buell* teaches a cuff that meets the applicant's criteria for ΔP by increasing the product $(2\gamma\cos\theta_m/r)$. Specifically, the Examiner refers to *Buell* at Column 9, lines 17-44 and Figure 6 as setting forth such a cuff,

which has a breathable portion and an impermeable portion. Further, the Examiner refers to the disclosure in *Buell* that the leg cuffs have a hydrophobic portion (Column 10, lines 44-49). This hydrophobic portion is situated on the inner surface of the breathable portion of the leg cuff in order to retard passage of liquid through the breathable zone. The entire length of the cuff, both the breathable portion and impermeable portion, has an inner surface, but *Buell* only teaches the hydrophobicity of the inner surface of the breathable portion. This is needed because the breathable portion includes apertures that decrease the ability to keep the liquid inside the leg cuffs. The inner hydrophobic portion does not cover the distal edge (35) at the top of the leg cuff. Hence, *Buell* teaches avoiding leakage through the surface of the barrier and does not teach avoiding leakage between the sealing edge of the barrier and the skin of the wearer. Thus, if any ΔP is increased in *Buell*, it is the ΔP through the barrier and not the ΔP between the sealing edge of the barrier and the skin of the wearer.

The Examiner also asserts Figure 6 as structure in *Buell* that anticipates the present invention. However, Applicant's point out that the embodiment described by Figure 6 is a loop of the breathable portion, such that the distal edge and the inner face section are apertured. Recognizing a trend to leak, there is a space in-between the two face sections to collect fluid that tends to leak through the breathable portion. There would in fact be a decrease in ΔP between the sealing edge of the barrier and the skin of the wearer. Thus, this embodiment does not teach any ways of improving the sealing effect between the skin of the wearer and the sealing edge of the cuff.

Additionally, the Examiner notes a disclosure from applicant's specification that the wetting angle of the skin varies in accordance with the state of the skin, i.e.,

whether the skin is clean or dirty. Applicants note that the effect of dirty skin on the overall sealing effect can vary. First, the effect can vary depending on what kind of dirt is concerned. While dirty skin may result in an increased wetting angle, it can also have a negative effect by increasing the pore size between the skin and liquid barrier. However, the claims at issue include the claim limitation of **modifying or treating the absorbent article**. This limitation is not met by modifying the nature of the skin, clean or dirty, to which an absorbent article according to the invention is applied.

Specific to claim 40, the Examiner asserts that *Buell* discloses an article wherein the free elastic sealing edge is comprised of a ribbon-like elastic film as set forth in Figure 6. However, this is not the same as the free elastic sealing edge according to claim 40. Please refer to Figure 3c of the present application for an exemplary ribbon-like elastic film sealing edge. Instead, the elastic in Figure 6 from *Buell* is enclosed in the free edge, i.e., the leg cuff material encloses the elastic. The distal edge will therefore be puckered and comprise pores. Thus, the sealing effect achieved by the edge in present claim 40 will not be achieved by the leg cuff in Figure 6 in *Buell*.

Clearly, *Buell* does not anticipate the present invention because, at least, *Buell* does not teach increasing the ΔP at the **sealing edge of the barrier and the skin**. Instead, *Buell* is focused on creating a breathable cuff. In *Buell*, the sealing edge includes an elastic and using an impervious layer on the inside of the cuff. This arrangement does not increase the ΔP between the barrier edge and the skin compared to prior art diapers. Thus, *Buell* does not provide any teaching or

suggestions to modify the wetting angles or pore size in relation to the ΔP at the sealing edge of the barrier and the skin.

Accordingly, the applicants respectfully request that the rejection of claims 15 and 25-42 under 35 U.S.C. § 102(b) as allegedly anticipated by *Buell* and claims 16-42 under §103(a) as allegedly obvious over *Buell* be withdrawn.

In view of the foregoing, further and favorable consideration of the subject application in the form of a Notice of Allowance is respectfully requested.

If there are any questions concerning this response, or the application in general, the Examiner is respectfully requested to telephone applicant's undersigned representative so that prosecution may be expedited.

Respectfully submitted,

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Date: November 12, 2004

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